

SCANDAL IN THE LABORATORY

# DISCOVER

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## THE BODY'S LIMITS

How Fast?  
How High?  
How Far?

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Teen-Age Suicide:  
Warning Signals

The Filmless  
Camera

A Saturn Portfolio

Searching for a  
Malaria Vaccine

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Although each of these tiles would have to be removed, cleaned, and reattached to the spacecraft, launch director George Page was hopeful that the work could be done on the launch pad without moving *Columbia* back into the Vehicle Assembly Building three miles away. Even if it can be done on the launch pad, astronauts Joe Engle and Richard Truly will still have to wait a few extra weeks to get into space. Otherwise, transporting the *Columbia* to the Vehicle Assembly Building and conducting extensive repairs could take more than a month.

### Stress Hormone

In times of stress, the body swiftly prepares itself for fight or flight; blood pressure and the level of blood sugar rise; aggressive feelings and the urge to move around increase; and sensitivity to pain decreases. Scientists have thought for a quarter of a century that some of the responses to stress were controlled by a brain hormone that causes the pituitary gland to release other hormones. These, in turn, alter mood and sensation and stimulate the adrenal glands to secrete a third group of hormones, which prepare the body for action. But the powerful brain hormone that starts the whole process, called CRF (for corticotropin releasing factor), occurs in only minute quantities in a part of the brain called the hypothalamus. CRF is so hard to isolate that several research teams gave up the task after years of trying.

Now, after ten years of work on extracts of 490,000 sheep brains obtained from commercial slaughterhouses, a group headed by Wylie Vale, at the Salk Institute in La Jolla, California, has isolated 90 millionths of a gram of CRF, analyzed its chemical structure, and synthesized it in the laboratory. They report in a September issue of *Science* that the hormone is a peptide—a chain of some of the amino acids that make up proteins.

CRF's first use, says Vale, will probably be in diagnosing disorders of the pituitary or adrenal glands. If a person has symptoms that respond to CRF, doctors will know that the pituitary and adrenals are behaving normally and that the origin of the disorder may be in the brain.

Later, CRF may be used to study the physiological consequences of stress. Although the changes triggered by an emergency may be essential to survival, scientists believe that prolonged stress, especially the kind caused by psychological factors, may lead to heart disease, stroke, hypertension, ulcers, behavioral

disorders, and lowered immunity to infection. Vale is intrigued by the prospect of using CRF (or some agent that blocks its action) to learn more about and treat stress-related diseases, but he says that such applications are "clearly years away."

### The Last Flower

Cloistered in a valley in northern England, it is protected by a fence and at times an around-the-clock guard. Its precise location is a secret closely guarded by the British government, and for good reason: when an article in the *London Times* unwittingly revealed clues to its whereabouts, dozens of people began combing the Yorkshire dales



Lithograph of a lady's slipper

for the treasure—a single wild orchid called a lady's slipper.

This lone flower is believed to be the last wild lady's slipper in Britain (the species, *Cypripedium calceolus*, is endangered across the Continent), and the country's Nature Conservancy Council is determined to hide it from overzealous plant collectors.

The council has good reason to be wary of collectors. They are largely to blame for the present plight of the lady's slipper, and often go to elaborate lengths to acquire specimens. For example, one night a thief broke into Kew Gardens, stole the root of the collection's only native lady's slipper, and stuck the flowers and stems back in the ground.

As time runs out for the British lady's slipper, conservationists would do almost anything to revive the precious

breed, but its reproductive habits are largely a mystery. The Yorkshire plant produces what appear to be seeds, but they never germinate; perhaps they have never been pollinated. One dedicated botanist kept a watch on the plant for ten years to see which insects would visit to pollinate it. None showed up. And so, despite all the care and secrecy surrounding the wild lady's slipper, its days in Britain seem numbered.

### Antibodies Fight Cancer

The latest weapon in the war on cancer is a treatment that pits antibodies mass-produced in the laboratory against malignant cells. The new therapy has not cured anyone, but when it was tried on six patients with cancer of the white blood cells who had failed to respond to other treatment, three of them improved markedly.

Antibodies, which are produced by the immune system, single out and help destroy foreign material. To use antibodies against cancer, physicians Richard Miller and Ronald Levy, of Stanford University, exposed antibody-producing mouse cells to a protein that is often found on the surface of human cancer cells but only occasionally on healthy cells. These mouse cells, thus stimulated to begin producing antibodies against cancer cells, were fused with mouse tumor cells, which, unlike healthy cells, thrive and multiply indefinitely. The resulting hybrid cells became antibody factories, producing unlimited amounts of antibodies—called monoclonal antibodies—that in this case would attack cancer cells specifically. Finally, these monoclonal antibodies were injected into the six patients.

One of the major worries of the researchers was that their patients would become allergic to the mouse-derived antibodies, but so far this has not happened. Miller and Levy now hope to develop a wide variety of antibodies to knock out many types of malignant cells.

### Mice with Rabbit Genes

Researchers at Ohio University have succeeded in "fooling" newly fertilized mouse eggs into accepting a rabbit gene that had been slipped into a mouse sperm cell. The mice born of this odd union did not have long ears or cotton-tails, but they did produce a blood protein normally found only in rabbits. And so did their offspring. The experiment, reported in the October *Proceedings of the National Academy of Sciences*, is the first published case in which a gene transferred from one mammalian spe-